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## ***USING PERSONALITY ASSESSMENT FOR LEADERSHIP SELECTION***

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## USING PERSONALITY ASSESSMENT FOR LEADERSHIP SELECTION

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## Summary

### Problem

Leadership is a critical element of effective military performance. Leadership potential may be a function of personality, but this factor is not a criterion in current screening and selection programs.

### Objective

The present work was undertaken to establish a potential leadership screening profile by reviewing prior studies of the personality correlates of leadership.

### Approach

The research literature was reviewed to identify past studies of personality correlates of leadership conducted in military populations. The five-factor model of personality was used to organize the findings. The temporal stability of personality, the degree of overlap between personality and mental ability, and the potential for personality screening to produce ethnic/gender biases also was reviewed to assess the potential impact of personality-based leadership screening.

### Results

(A) Past research is limited by the lack of good leadership criterion measures. (B) Despite criterion limitations, the available evidence indicates that leadership potential is related to elements of emotional stability, extraversion, agreeableness, and conscientiousness domains. (C) Leadership potential depends on specific personality facets. Both positive (e.g., assertiveness) and negative (e.g., sociability) indicators of leadership potential can be found within a single general domain (i.e., extraversion). Similar contrasts were identified in the agreeableness and conscientiousness domains. (D) Personality differences are sufficiently stable over time to permit useful forecasting of leadership potential. (D) Personality screening is not likely to be biased against ethnic minorities, but gender differences in leadership-relevant personality traits have been clearly identified in past research. (E) Personality effects on leadership potential are independent of mental ability.

### Conclusions

Personality screening is a factor in leadership potential. This review provided specific hypotheses regarding the personality correlates of leadership potential. The state of the art is such that those hypotheses must be tested using sound leadership criterion measures before using them as guidelines for screening or selection. Confirmation of the hypotheses would yield a workable screening tool.

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### Background

Leadership career development is a concern for individual military personnel and for military organizations. Individuals want career opportunities for realizing personal objectives such as advancement, financial rewards, and intrinsic satisfactions from work. Organizations want assignment strategies that provide optimal distribution of personnel for operational readiness.

Initial entry level selection procedures are designed to ensure that recruits can master the technical components of their Navy occupational specialties. Mental ability is the best available predictor for technical proficiency (Hunter & Hunter, 1984; Schmitt, Gooding, Noe, & Kirsch, 1984) and therefore is a focus of entry level selection. As careers progress, seniority typically will be accompanied by increased responsibility for administrative and leadership tasks. These added responsibilities may be performed most effectively by people who possess specific personality characteristics.

Is it possible to use personality measures to identify potential leaders early in their military careers? This question is the primary focus of the present report. Derivative questions include: What specific personality attributes are important for leadership? Are measures taken early in one's career effective in predicting leadership potential at later points? How can personality measures best be combined with current screening based on mental ability? Can problems such as adverse impact, faking, and related issues be satisfactorily resolved?

### Organization of the Paper

This paper is organized in three sections. The first section addresses the central questions:

Is there evidence that personality is related to military leadership?

Should personality be measured as broad dimensions (e.g., extraversion) or narrower constructs (e.g., assertiveness)?

Answering these questions produces a leadership personality profile based on recurring themes in the review.

The second section deals with the use of personality variables in selection programs. Questions addressed include:

Is personality sufficiently stable across time in young adults to use personality measures taken early in a Navy career to forecast mid- to late-career leadership capacities?

Can career experiences develop leadership potential by changing personality?

Do factors such as social desirability and faking make it impossible to use personality measures in selection programs?

Are personality indicators biased against particular demographic groups?

Is personality redundant with other selection criteria, notably mental ability?

What available personality measures are most suitable for assessing leadership potential?

Answers to these questions indicate that personality measures can be useful in selection programs.

The final section presents suggestions pertaining to the implementation of personality-based selection for leadership.

#### The Five-Factor Model of Personality

A broad range of personality attributes is examined in the leadership literature with little or no overlap in the specific measures considered in different studies. A general personality measurement model commonly referred to as the five-factor model of personality, or FFM for brevity, provides a frame of reference that can help identify consistencies between studies despite the variation in specific measures used in particular studies. The FFM divides personality into five major domains described in Table 1. The terms representing the domains were taken from McCrae and Costa (1992) and Goldberg (1992). The

Table 1  
Domain Content of the Five-Factor Model of Personality

| <u>Domain</u>             | <u>Representative Adjectives</u>  |
|---------------------------|---|
| <b>Neuroticism:</b>       | Anxious, fearful, worrying, irritable, impatient, excitable, pessimistic, moody, sarcastic, hasty, temperamental, envious, insecure, touchy, high-strung                    |
| <b>Extraversion:</b>      | Friendly, warm, cheerful, social, outgoing, aggressive, assertive, forceful, enthusiastic, energetic, quick, determined, active, daring, adventurous, humorous, spontaneous |
| <b>Openness:</b>          | Dreamy, imaginative, idealistic, artistic, original, inventive, versatile, interests wide, curious, unconventional, intellectual, complex, deep                             |
| <b>Agreeableness:</b>     | Forgiving, trusting, peaceable, warm, soft-hearted, gentle, generous, kind, tolerant, helpful, considerate, sympathetic   |
| <b>Conscientiousness:</b> | Efficient, self-confident, thorough, resourceful, organized, precise, methodical, ambitious, industrious, enterprising, determined, persistent, steady, prompt              |

Note: Labels in bold face are used to refer to the general domain in the remainder of this report. Adjectives indicate only the positive indicators of the personality variable.

chosen terms represent only attributes associated with a high score on the dimension as labeled. Other terms with approximately opposite meanings would be associated with low scores (e.g., disorganized, careless for the conscientiousness domain). More detail on the FFM can be found in many sources (e.g., Costa & McCrae, 1985, 1992; John, 1990).

The FFM is a basis for organizing and evaluating study designs. This model will not be the recommended basis for measuring personality indicators of leadership capacity. Evidence reviewed in the remainder of this report shows that not all of the indicators in a given domain have the same significance for leadership. For example, achievement motivation and striving for high standards appear important in the conscientiousness domain, but orderliness and dutifulness do not. The most complex example may be the agreeableness domain where the leader must display trust and honesty, while not necessarily being generous or altruistic. Again, the primary uses of the FFM are to classify scales across studies for the purposes of determining breadth of coverage of the overall personality domain and to highlight consistency in the face of diverse specific measures.

#### Personality and Military Leadership Potential

Is personality related to leadership? The empirical evidence bearing on this question is presented in the following pages. A search of the PsychLit computerized database for 1974 through 1993 was made using the keywords "personality" and "leadership" to select articles of potential interest. The search produced a total of 479 articles for the 20-year period. Further review of the abstracts indicated that only 91 articles actually provided empirical data relevant to the present objectives.

The 91 articles with empirical data on personality and leadership were examined for relevance to military leadership. Articles that dealt with leadership in laboratory studies of group dynamics or election to positions of leadership in voluntary organizations were dropped from further consideration. Those studies involved organizations that differed widely from Navy work settings with regard to purpose, bases for organization membership, rewards to leaders and subordinates, and so on. While leadership may require the same attributes in all settings, it is possible that the attributes of a leader vary across situations. If so, including studies from settings that are radically different from the Navy organization would confuse the picture when attempting to identify personality correlates of leadership in the Navy.

Some articles dealt with leadership in civilian work organizations. Generalization from these settings to military organizations appears to be justifiable for job performance in general (Kamp & Hough, 1988) and may be so for leadership (Gough, 1984). However, here again, differences in organizational structure, organizational philosophy, the nature of the product provided, career development patterns, and other factors raise the possibility that results obtained in other settings will not apply to military organizations in general and the Navy in particular. If the same personality factors are relevant to leadership in both military and civilian work settings, the military literature should produce the same personality profile as would be derived from the combined military and civilian literature. However, if the differences noted above alter the requirements for effective leadership, combining the two literatures would produce an amalgamation of trends that would obscure the military leadership profile. Based on this reasoning, the review was limited to military leadership studies to minimize the risk of erroneous inference. It was not possible to focus solely on Navy leadership studies, because too little research was available to impose this further restriction.

The focus on military leadership appeared to offer the best trade-off between having enough data to verify general trends without having to generalize too broadly across different types of situations. The five articles pertaining to this topic covered all branches of the service, but emphasized officer populations.

The results of these studies are summarized and criticized below in two phases. The first phase provides a general description of each study and summarizes findings in terms of the broad FFM dimensions. The results presented in this phase make a case that personality is related to leadership potential and point out general limitations of the available evidence. The second phase of the review extends the analysis of personality to specific facets. The evidence is reviewed for indications of differential correlations between leadership criteria and specific personality attributes within the general FFM dimensions.

#### Phase 1: Military Leadership and General Personality Dimensions

West Point Leadership. Gough, Lazzari, Fioravanti, and Stracca (1978) utilized Gough and Heilbrun's (1965) Adjective Check List (ACL) inventory to identify personality correlates of leadership ratings in West Point cadets ( $n = 523$ ). The ACL measures 19 personality attributes from a "folk concepts" perspective. Folk concepts represent the ways that people organize their everyday perceptions of the behavior of other people. These concepts do not correspond precisely to more formal scientific attempts to isolate key areas of personality (Tellegen, 1991) and typically provide measures that are mixtures of the five major dimensions of personality comprising the FFM (Piedmont, McCrae, & Costa,

Table 2  
Personality Correlates of Aptitude for Military Service  
in West Point Cadets

| <u>ACL Scale</u>    | Correlation to<br>Leadership | Related<br>FFM Dimensions |
|---------------------|------------------------------|---------------------------|
| Succorance          | -.22                         | N, C-                     |
| Endurance           | .21                          | C, N-                     |
| Self-Control        | .19                          | E-, A                     |
| Achievement         | .18                          | C, E                      |
| Order               | .17                          | C, N-                     |
| Dominance           | .15                          | E, A-                     |
| Affiliation         | .14                          | N-, A, E                  |
| Nurturance          | .12                          | A                         |
| Personal Adjustment | .12                          | N-, A, C                  |
| Aggression          | -.12                         | A-                        |
| Self-Confidence     | .10                          | E, N-                     |
| Autonomy            | -.10                         | A-                        |
| Abasement           | -.10                         | A, E-, N                  |

Note: ACL scales were matched to an FFM dimension if their correlation to that dimension was  $r = .29$  or greater (absolute value) in Piedmont et al. (1991). FFM dimensions are labelled "N" = Neuroticism, "E" = Extraversion, "O" = Openness, "A" = Agreeableness, and "C" = Conscientiousness (See Table 1).

1991). However, the folk concepts do provide a useful framework for describing general aspects of behavior. These descriptions then can be used to approximate five-factor measures and as a basis or starting point for more formal scientific descriptions of behavior (Tellegen, 1991).

The criterion was an Aptitude for Military Service Rating (ASR). This criterion was based on ". . . peer evaluations, ratings by cadet officers, and by tactical officers" (p. 385). These ratings have been reported to have substantial validity for predicting criteria such as combat performance, promotion to field grade posts, and standard officer ratings. The ASR was only moderately related to academic performance ( $r = .37$ ), so it cannot be thought of as merely a measure of intelligence or academic capabilities.

Personality variables that correlated  $r = .10$  (absolute) or more with the leadership criterion are shown in Table 2. Table 2 also maps the ACL scales onto a standardized measure of the FFM based on findings reported by Piedmont et al. (1991). The most obvious conclusion is that the leadership criterion has a complex relationship to personality. Four of the five FFM domains are indicated in the table. The openness domain is not included in the table, but this absence may be attributable to the fact that the ACL scales include few openness indicators (Piedmont et al., 1991).

Junior Officers of the U.S. Coast Guard. Blake, Potter, and Slimak (1993) examined relationships between scales from the California Psychological Inventory (CPI; Gough, 1987) and performance ratings of U.S. Coast Guard Academy Graduates ( $n = 120$ ; 13 females, 5 minorities) who had been commissioned for 2 years at the time of the study.

The performance criterion was an overall 5-point "officer effectiveness rating." This rating represented the judgment of two officers who participated in the study. These officers had experience in billets comparable to those occupied by the study group. Their ratings were based on performance ratings contained in the standard organizational records for the study group. These records included ratings every 6 months on behaviorally anchored rating scales for 23 attributes. Based on these ratings, the two officers constructed a five-group classification which distinguished outstanding junior officers who received comments like "best ever" in their ratings ( $n = 8$ ) from those "highly recommended for command, but not 'best ever'" ( $n = 25$ ); those who were "solid performers" ( $n = 28$ ); below average performers with persistent flaws ( $n = 16$ ); and, finally, a group that failed selection for promotion ( $n = 7$ ). The analysis assigned scores of "5" to those individuals in the outstanding junior officer group, "4" to the highly recommended group, down to "1" for those who were not promoted.

The criterion for inferring a relationship between personality and the leadership rating in these analyses was  $r = .20$  (absolute) or greater. This criterion was more stringent than that applied to the Gough et al. (1978) data because fewer people were studied by Blake et al. (1993). The smaller sample size meant that correlations satisfying the  $r = .10$  criterion were likely to occur by chance. Correlations equal to .20 or more in absolute magnitude were statistically significant ( $p < .05$ ) given the sample size in Blake et al.'s (1993) study. Six of 18 scales met the criterion (Table 3).

The CPI scales were mapped onto the FFM based on findings reported by McCrae, Costa, and Piedmont (1993). Once again, four of five FFM domains are represented in the mapping. As in the Gough et al. (1978) study, higher leadership ratings appear to be found in extraverted, emotionally stable, conscientious individuals.

Table 3  
Personality-Leadership Correlations in Coast Guard Officers

| <u>CPI Scale</u>        | <u>Correlation to Leadership</u> | <u>Related FFM Dimensions</u> |
|-------------------------|----------------------------------|-------------------------------|
| Dominance               | .37                              | E, N-, O                      |
| Intellectual Efficiency | .24                              | O, N-                         |
| Responsibility          | .24                              | C                             |
| Self-Acceptance         | .21                              | E, O                          |
| Well-Being              | .21                              | N-                            |
| Good Impression         | .20                              | N-, C                         |

Note: FFM dimensions are labelled "N" = Neuroticism, "E" = Extraversion, "O" = Openness, "A" = Agreeableness, and "C" = Conscientiousness (See Table 1).

Apparent differences between the FFM profile for leadership in Blake et al.'s (1993) study and Gough et al.'s (1978) study may be a function of the questionnaires used. Blake et al.'s (1993) findings suggest that leaders will be high on openness and leave agreeableness out of the list of personality correlates of leadership. Gough et al. (1978) findings suggest that high agreeableness is important for leadership, while openness is irrelevant. However, McCrae et al. (1993) found that the CPI lacks indicators of agreeableness. Piedmont et al. (1991) reported that the ACL lacks indicators of openness. Therefore, when the two studies are considered in combination, all five FFM domains were implicated as factors in leadership. Furthermore, the results that could be replicated across studies did replicate.

Academic and Leadership Performance at the U.S. Naval Academy. Atwater (1992) examined mental ability and personality as predictors of performance at the U.S. Naval Academy, Annapolis, MD ( $n = 99$ ). Performance measures included cumulative grade point average (GPA) at the Naval Academy, a cumulative training performance rating based on individual ratings made by the midshipman's superior officer each semester at the academy, a supervisor's rating of performance during a 3.5-week summer leadership assignment indoctrinating incoming freshmen, and ratings by subordinates during the indoctrination course.

Personality measures in this study were indicators of emotional stability and conscientiousness taken from Cattell's 16-PF (Cattell, Eber, & Tatsuoka, 1970). Emotional stability was not related to any of the performance ratings (absolute  $r < .09$ ). Conscientiousness was related to superior satisfaction with leadership during the summer course ( $r = .16$ ), but not to any other performance indicator (absolute  $r < .10$ ).

Atwater's (1992) findings added to the evidence that conscientiousness is related to leadership. However, this personality attribute was related only to the leadership ratings provided by the individual's supervisor and not ratings by subordinates. Unlike the previous studies, emotional stability was not related to performance. Inferences about the other three domains were not possible because no indicators of those domains were included in the predictor set.

Project A. Project A was a U.S. Army study of ability and temperament predictors of job performance in 9 Army enlisted military occupational specialties (MOSs). The study involved more than 4,000 job incumbents who completed paper-and-pencil measures of job knowledge as well as performing hands-on tests of actual job performance. Performance measures were reduced to:

- a. Core Technical Proficiency, the ability to perform the basic technical requirements of one's job.
- b. General Soldiering Proficiency, the ability to perform certain tasks which were not specific to the job such as first aid.
- c. Effort and Leadership, working hard on the job and providing an example for others.
- d. Personal Discipline, proper control and direction of one's behavior on the job.
- e. Military Fitness and Bearing, physical fitness level and military appearance.

Individual differences on the measures of technical proficiency were only weakly related to individual differences on the effort, fitness, and bearing dimensions.

Performance predictors included measures of conscientiousness and emotional stability. The conscientiousness domain was represented by two indicators, achievement orientation and dependability. Emotional stability was assessed by a single scale. Relevant findings were:

- a. Temperament measures were weak predictors of core and general job proficiency ( $r = .10$  for each predictor-criterion combination).
- b. Temperament measures were stronger predictors of effort and leadership, personal discipline, and military fitness and bearing ratings (median  $r = .22$ ; range from  $r = .11$  to  $r = .30$ ). Achievement motivation and dependability were stronger predictors than was emotional adjustment.
- c. Controlling for differences in cognitive ability, temperament added little to the prediction of job proficiency, but substantially improved prediction of the behavior criteria.

The effort and leadership criterion merits closer attention for the present purposes. This criterion was defined as reflecting the " . . . degree to which the individual exerts effort over the full range of job tasks, perseveres under adverse or dangerous conditions, and demonstrates leadership and support toward peers." (McHenry, Hough, Toquam, Hanson, & Ashworth, 1990, p. 342). This criterion was related to the measures of achievement motivation ( $r = .30$ ), dependability ( $r = .20$ ), and adjustment ( $r = .19$ ), but was at best weakly related to measures of cognitive ability (e.g.,  $r = .07$  for verbal ability).

These findings fit with previous trends. Conscientiousness was linked to leadership for the fourth time in four studies. Emotional stability was linked to leadership for the third time in four studies. No comments on the other FFM domains are possible because measures for these domains were not included in the study.

Early Promotion of Air Force Officers. The foregoing studies focus on leadership ratings. Santens and Walker (1983) provided a study with a different criterion that may reflect leadership. Their study compared Air Force officers who were promoted ahead of schedule to officers promoted on schedule. This criterion can plausibly be interpreted as a combination of demonstrated task proficiency and some demonstration of leadership potential. Ratings such as those considered in the prior studies play a part in the promotion decisions, so promotion criteria can be expected to show a profile similar to that for the other leadership studies.

The 16-PF (Cattell et al., 1970) provided personality measures in Santens and Walker's (1983) study. The early promotion group were more outgoing, assertive, venturesome, suspicious, and apprehensive than were those promoted on schedule. Evidence on the relationships between 16-PF scales and FFM measures provided by Gerbing and Tuley (1991) translates the observed differences associated with rapid promotion into higher neuroticism (apprehensiveness), higher extraversion (outgoing, warm, venturesome), and lower agreeableness (suspiciousness).

The running tally of findings changes significantly with the addition of the Santens and Walker (1983) findings. The association between early promotion and extraversion is a qualitative replication of two prior findings. However, the association between higher neuroticism and advancement is contrary to the general trend in other studies. The association between lower agreeableness and advancement is contrary to the findings of Gough et al. (1978). Note also that conscientiousness was not related to advancement and the results provide a third inconsistency compared to trends in other studies.

The inconsistencies between the Santens and Walker (1983) results and other findings could be explained several ways. The specific type of criterion considered may be a factor. The officer population being studied is highly select and may fail to demonstrate some associations because all of the personnel are quite similar (e.g., all are conscientious, so this factor is a constant). It is also possible that the results were simply chance.

Summary of Previous Findings. The preceding review can be summarized at two levels. The first level of summary characterizes the populations considered. Four of five studies involved officers or officer candidates. Three of the five studies demonstrated that the leadership criterion was distinct from task proficiency (or academic proficiency). Only Santens and Walker (1983) employed a criterion that can clearly be regarded as a composite variable.

One important deficiency applied to most of the studies. Only Santens and Walker (1983) employed a personality inventory that covered all five domains of the FFM. Two studies specifically limited the focus to two of the five domains. Combining this observation with the points noted above produces a somewhat disappointing observation. No study has combined comprehensive personality domain coverage with a well-defined leadership criterion. Obviously, this point defines a significant limitation of the available evidence.

The general pattern of associations between personality and military leadership is summarized in Table 4. The four studies that relied on leadership ratings as criteria consistently indicated that conscientiousness was related to better leadership. Three of those four studies showed that emotional stability was related to better leadership. Mixed findings within some studies and/or omission of important domains in other studies make it impossible to make confident statements about the remaining domains.

Overall, available evidence supports the position that personality is related to leadership, but the precise pattern of relationships is vague.

Table 4  
Five-Factor Model Summary of Military Leadership Findings

|                | <u>N</u> | <u>E</u> | <u>O</u> | <u>A</u> | <u>C</u> |
|----------------|----------|----------|----------|----------|----------|
| West Point     | -        | M        | ?        | M        | +        |
| Coast Guard    | -        | +        | +        | ?        | +        |
| Naval Academy  | 0        | ?        | ?        | ?        | +        |
| Army Project A | -        | ?        | ?        | ?        | +        |
| Air Force      | +        | +        | ?        | -        | 0        |

Note: Column headings: N = Neuroticism, E = Extraversion, O = Openness to Experience, A = Agreeableness, C = Conscientiousness.

Table entries are "-" for negative association, "+" for positive association, "0" for no association, "M" for mixed findings, and "?" for no data available.

The leadership criteria also merit comment. Personality measures cannot be validated as indicators of leadership potential without a well-defined, properly measured criterion variable. Limitations of the leadership criteria could be suggested for virtually all of the studies. Should being promoted to a position of increased leadership responsibility be assumed to reflect past demonstrations of leadership? If the essence of leadership is obtaining the concerted support of subordinates in the pursuit of organizational goals, are supervisor ratings of leadership appropriate? Note that in the one study that involved subordinate ratings as well as supervisor ratings, the two sources of information produced different results (Atwater, 1992). These questions indicate that the findings summarized here should be interpreted with caution. Ambiguity is present because the relationship between the available set of leadership indicators (i.e., ratings and advancement) and a well-defined concept of leadership has not yet been defined. Unfortunately, the study that used the most carefully validated measure of leadership failed to cover all the FFM domains and did not analyze personality at the level of specific facets (Gough et al., 1978).

#### Phase 2: Specific Personality Correlations of Leadership

The second phase of the review of personality and military leadership extends the level of analysis down from general dimensions to more specific personality attributes. The central question in this portion of the review was whether relationships between leadership and personality are variable within the broad FFM domains. For example, suppose assertiveness is important for leadership, but sociability is not. Both behavioral tendencies are included in measures of extraversion. In this example, however, a measure that focused specifically on assertiveness would be preferable to an overall extraversion measure for selecting leadership candidates. Evidence reviewed in the next section indicates that specific elements within the broader domains should be considered in the areas of conscientiousness, agreeableness, and extraversion.

Sources of Data. The detailed examination of leadership correlates within general personality domains is limited to the studies by Gough et al. (1978) and Blake et al. (1993). The methods of drawing inferences are slightly different in the two instances, so the approaches are reviewed briefly here to provide context.

The construction of an adjective scale for leadership made finer analysis of the personality correlates of leadership possible in the Gough et al. (1978) study. This scale consisted of 50 adjectives that correlated with leadership ratings in the West Point sample and in two samples of Italian officer candidates. Inferences about the relevant attributes within a given domain have been developed by first grouping the 50 adjectives with regard to the FFM, then looking to see whether specific attributes show different patterns of association to leadership within domains.

As an example of the treatment of the Gough et al. (1978) findings, consider the adjectives "enthusiastic" and "noisy." Both were classified as positive indicators of extraversion. The former is positively related to leadership ratings, but the latter is negatively related to leadership ratings. This differential suggests that it is important to make distinctions between specific behaviors within the extraversion domain.

The strategy for translating Blake et al.'s (1993) findings into more detailed evaluations began by listing the scales that correlated with leadership ratings. Facet-level profiles for each leadership correlate within each domain were determined from McCrae et al. (1993). If two facets had correlations that differed substantially in magnitude or sign of relation to the CPI scale of interest, this differential was a basis for inferring the stronger predictor(s) should be measured to predict leadership.

An example of this approach is provided by considering the relationships between the CPI Dominance scale and the Agreeableness facets provided by the NEO Personality Inventory-Revised (NEO PI-R; Costa & McCrae, 1992). Dominance was a correlate of leadership. The facet-level profile for this CPI within the Agreeableness domain included a positive correlation to Trust and negative correlations to all other facets. This difference suggests that trust of others should be discriminated from Agreeableness facets when constructing leadership screening profiles.

The results of applying these approaches to the two studies are summarized below for each FFM domain. One objective is to determine whether distinctions between personality facets within FFM domains are important for predicting leadership potential. A second objective is to determine whether the within-domain differences from the two studies replicated one another in any way.

Neuroticism. None of the 50 adjectives comprising Gough et al.'s (1978) leadership scale was classified as an indicator of neuroticism.

The Blake et al. (1993) findings also translated into a largely undifferentiated view of neuroticism. Three of the six CPI scales that predicted leadership ratings (see Table 3 above) were substantially related to neuroticism indicators in the McCrae et al. (1993) study. All six NEO PI-R Neuroticism facets were related to Good Impression and Well-being. However, only three facets, Depression, Self-Consciousness, and Stress Vulnerability were related to the CPI Dominance. This latter scale is the best CPI indicator of leadership (Megargee, 1972).

These findings suggest that depression, self-consciousness, and stress vulnerability may be key elements of neuroticism for leadership. However, no replicable differences were identified.

Extraversion. The 50 Gough et al. (1978) adjectives included alert, enthusiastic, strong, show-off, and noisy. All of these adjectives would be indicators of high extraversion in most schemas, but the first four were positively related to leadership ratings and the last two were negatively related to leadership. One interpretation is that the exhibitionistic elements of extraversion not only are not indicators of leadership potential, but they actually lower potential.

The Blake et al. (1993) findings again provide some basis for believing that distinctions within the general domain are important. All six NEO PI-R Extraversion facets were related to both CPI Dominance and CPI Self-Acceptance, but the strength of associations varied markedly. The average correlation between the two CPI scales and NEO PI-R Assertiveness ( $r = .56$ ) was much larger than the averages for the remaining facets ( $r = .30$  to  $r = .38$ ).

The evidence suggests that assertiveness is a key component of extraversion. Exhibitionism is counterproductive. Sociability components of NEO PI-R Extraversion were not related to leadership. The other positive adjective items are suggestive of the NEO-PI facet of Activity (alert, strong), but this facet did not stand out in the evaluation of the Blake et al. (1993) findings.

Agreeableness. The Gough et al. (1978) adjectives can be sorted into positive and negative indicators of agreeableness. Positive indicators include appreciative, cooperative, frank, honest, thoughtful, tolerant, moderate, and kind. Except for "kind," these adjectives were positively related to leadership ratings.

The negative adjective indicators for agreeableness were aggressive, demanding, bossy, hard-hearted, hostile, suspicious, tactless, quarrelsome, rude, conceited. These indicators of low agreeableness were associated with poor leadership ratings with two exceptions. Being aggressive and demanding were associated with better leadership.

The Blake et al. (1993) findings also translate into a complex picture relating leadership to agreeableness. NEO PI-R Trust was related to CPI Responsibility ( $r = .38$ ), CPI Well-Being ( $r = .37$ ), and CPI Intellectual Efficiency ( $r = .35$ ), but these three CPI scales were largely unrelated to the remaining NEO PI-R Agreeableness facets. Furthermore, NEO PI-R Trust was positively related to NEO PI-R Dominance ( $r = .21$ ), while four other NEO PI-R Agreeableness facets were negatively related to this scale (Straightforwardness,  $r = -.11$ ; Altruism,  $r = -.14$ ; Compliance,  $r = -.27$ ; Modesty,  $r = -.24$ ). Thus, NEO PI-R Trust was positively related to four CPI correlates of leadership ratings while the other five NEO PI-R Agreeableness facets were at least independent of those scales. If Dominance is the best CPI indicator of leadership potential, the other NEO PI-R Agreeableness facets actually appear negatively related to leadership.

The relationship between agreeableness and leadership clearly is complex. Both studies produced evidence that some positive indicators of agreeableness are associated with good leadership ratings while others are associated with poorer leadership ratings. The identification of common themes is difficult because there is no simple mapping from one study to the other. However, trust appears to be a desirable quality in leaders in both studies if "suspicious" is considered an antonym of trusting. It might also be

suggested that kindness and altruism were consistently negatively related to leadership. Some inconsistency across the studies is suggested if one equates frankness, a positive leadership marker for Gough et al. (1978), with the NEO PI-R facet of Straightforwardness, a probable negative correlate based on the Blake et al. (1993) findings.

Conscientiousness. The adjectives that Gough et al. (1978) included in their scale included capable, conscientious, deliberate, dependable, efficient, industrious, methodical, persevering, and responsible. All of these positive indicators of conscientiousness were positively related to leadership ratings.

Negative conscientiousness indicators were frivolous, shiftless, unambitious, and reckless. All of these negative indicators were negatively related to leadership ratings.

NEO PI-R Conscientiousness facets tended to be related to all of the CPI scales that Blake et al. (1993) found to be correlated with leadership ratings. However, the strength of association differed across facets. NEO PI-R Competence, NEO PI-R Achievement Striving, and NEO PI-R Self-Discipline ( $r = .10$  to  $r = .51$ , average  $r = .31$ ) were more strongly related to the CPI scales than were NEO PI-R Order and NEO PI-R Deliberation ( $r = .06$  to  $r = .24$ , average  $r = .14$ ).

Conscientiousness indicators were broadly related to leadership as would be expected from the results obtained with overall domain scales. Differentiation within the general domain was limited to differences in strength of association. Strength of association was not reported for the Gough et al. (1978) items, so the consistency of findings across studies cannot be evaluated on this key point. The Blake et al. (1993) findings translate into an emphasis on achievement through self-discipline with less importance attached to being orderly, methodical and deliberate. Some external validation of this differentiation is provided by the observation that effort and leadership was more strongly related to leadership striving ( $r = .30$ ) than to dependability ( $r = .20$ ) in Project A (McHenry et al., 1990).

Openness to Experience. Adjective indicators of openness included civilized, independent, humorous, and wise as positive indicators. Negative indicators were dull, interests narrow, and superstitious. The negative indicators were uniformly related to lower leadership ratings. Most positive indicators were related to higher leadership ratings, but there were two notable exceptions. Humorous and wise were negative indicators of leadership.

Four of six NEO PI-R Openness to Experience facets (Feelings, Actions, Ideas, and Values) produced moderate correlations to CPI Dominance, CPI Self-Acceptance, and CPI Intellectual Efficiency ( $r = .15$  to  $r = .39$ ; average  $r = .28$ ). The other two facets (Fantasy and Aesthetics) produced substantially weaker correlations ( $r = .08$  to  $r = .23$ , average  $r = .15$ ).

Once again, consideration of specific elements within a general domain may be important. The content of the NEO PI-R facets does not map onto the adjective indicators in any specific fashion. However, openness to ideas and values suggest a tolerant and accepting view of other people. These elements of openness are logically related to some of the agreeableness correlates of leadership.

Summary. These fine-grained analyses make one general point clear. Detail is important when predicting leadership. In two FFM domains, positive indicators appear to be mixed with negative

indicators. In the remaining FFM domains, stronger predictors appear to be mixed with weaker predictors. The phrasing "appear to be" is used in the foregoing statements because the issues implied in these statements have not been directly examined in any of the studies considered.

The conclusion from this part of the review augments an earlier conclusion about limitations of the available personality-military leadership literature. The point was made previously that no study of military leadership has combined a comprehensive assessment of the FFM personality domains with a well-established leadership criterion. The present observations add the following: No study has systematically sampled leadership-relevant facets within the general personality domains. The available evidence provides a strong basis for believing that personality predicts leadership criteria. However, this evidence provides only rough guidelines regarding the specific leadership attributes to consider for this purpose.

#### Personality and Promotion in Navy Enlisted Ranks

The intent of this paper is to identify personality correlates of leadership in Navy enlisted personnel. As discussed previously, prior studies have emphasized officer populations. Project A provides some indication that those results generalize to the enlisted ranks, but Project A employed a highly restricted set of personality measures and a criterion that combined leadership with effort. If possible, it would be useful to verify that results obtained in other populations apply to Navy enlisted personnel.

Data from an ongoing study of personality correlates of long-term career outcomes in Navy enlisted personnel were examined in an attempt to link the previous literature to the Navy enlisted population. Preliminary findings from a more detailed report (Vickers, Hervig, & Booth, 1995) are presented here.

The study in question currently focuses on personality as a predictor of advancement in Navy hospital corpsmen. Personality was measured by the Comrey Personality Scale (CPS; Comrey, 1970). The CPS is a well-standardized personality inventory that covers all five domains of the FFM (Noller, Law, & Comrey, 1987) with sufficient specificity to permit an evaluation of within-domain hypotheses. The specificity of the CPS is provided by scales for 40 specific facets of personality referred to as "factor homogenous item dimensions" (FHIDs). The 40 FHIDs are classified into eight (rather than five) higher order domains in the standard CPS scoring.

The performance criterion for the present analyses was the person's rate at the end of his first-term enlistment. As noted previously in the discussion of Santens and Walker's (1983) study of early promotion in Air Force officers, this criterion is not likely to be a pure indicator of differences in leadership. In fact, leadership potential may be a minor influence on advancement for early promotions. These promotions probably depend more heavily on technical ability and task proficiency than on leadership as such. However, leadership potential indicators (e.g., annual evaluations) should figure to some extent in the determination of advancement. This point is given further attention after considering the results of the analyses.

Any use of advancement as a criterion requires that all of the people examined have the same general opportunities for advancement. Analyses were restricted to males who entered the Navy between October, 1972, and December, 1973, then went to Corpsman School following graduation from basic

training. Individuals who enlisted for tours of less than or more than 4 years were excluded as were individuals who entered the service with a rank of E-2 or higher due to special programs. This sample definition restricted analyses as much as possible to people who entered the service on equal footing and served under the same general geopolitical conditions and organizational policies.

Differences in advancement occurred within the sample. The observed distribution of rates at the end of the first-term enlistment in this sample was 41.3% E-3 or less, 48.3% E-4, and 10.4% E-5/6. This distribution was dichotomized into groups with ratings of E-4 or less and E-5/6 for analysis to provide a "rapid advancement" criterion.

Rapid advancement was associated with a number of personality attributes (Table 5). The FFM location of each scale shown in the table is a judgment by the author based on review of the CPS item content and Noller et al.'s (1987) proposed alignments of the eight higher-order CPS dimensions in the FFM space.

Table 5  
Personality Attributes of Corpsmen with Faster than Average  
First-term Advancement

| Scale<br><u>FHIDs</u> | t-value | Sig.   | Adjusted        |                 | FFM  |   |
|-----------------------|---------|--------|-----------------|-----------------|------|---|
|                       |         |        | r <sub>pb</sub> | r <sub>pb</sub> |      |   |
| Human Worth           | 1.76    | .040   | .10             | .15             | A    |   |
| Honesty               | 1.82    | .035   | .09             | .14             | A    |   |
| Generous              | -2.49   | .007   | -.14            | -.20            | A    |   |
| Not Selfish           | -1.71   | .044   | -.08            | -.14            | A    |   |
| Personal              |         |        |                 |                 |      |   |
| Conformity            | 2.43    | .008   | .12             | .18             | C    |   |
| Effort                | 1.73    | .042   | .13             | .12             | C    |   |
| Optimism              |         | 1.67   | .048            | .15             | .23  | N |
| Not Squeamish         |         | 1.97   | .025            | .11             | .16  | N |
| Sociability           |         | -1.74* | .044            | -.07            | -.09 | E |

\*t-test computed with separate variance estimates for the two groups because statistical tests indicated that the group variances differed significantly ( $p < .10$ ).

Note: Value of the t-test and statistical significance based on comparison of group means. "r<sub>pb</sub>" indicates a point biserial correlation and "Adjusted r<sub>pb</sub>" indicates the estimated correlation if FHID scales were lengthened to have an alpha coefficient reliability of .900. "FFM" indicates location relative to the five-factor model of personality. See text for details.

These results support the claim that personality should be measured at the facet level to predict leadership-related criteria. Nine of 40 FHIDs differed significantly ( $p < .05$ ) between groups. The probability of obtaining this many significant differences by chance is only  $p = .0013$ . In contrast, only one of eight higher-order dimensions differed. This frequency of significant findings is well within the range expected by chance ( $p = .334$ ).

The results again underscore both the importance of the agreeableness domain and the complexity of its relationship to leadership. The scales for Human Worth and Honesty reflect a belief in the positive value and trustworthiness of other people. The scales for Generous and Not Selfish reflect the individual's willingness to give to others as a matter of principle. These results suggest that trust in others is important for leadership, but that other elements of agreeableness are negatively related to leadership. The same characterization was reached in the preceding review of other research.

The results of this study also provide some further evidence that the motivational aspects of conscientiousness are important. The Effort scale can be interpreted as an index of willingness to persist and strive for success under difficult circumstances.

The evidence also suggests that only some conscientiousness facets are relevant to leadership. Higher Effort was related to faster advancement, but none of the five FHIDs that define a higher order domain of Orderliness in the CPS were related to advancement. The content of the Effort scale is consistent with an achievement motivation or persistence interpretation of this FHID, while Personal Conformity can be interpreted as indicating a willingness to pursue high standards. Thus, this part of the findings extends the trend for achievement-oriented elements of conscientiousness to be important relative to the orderly, methodical components.

The extraversion findings also were informative. Sociability was negatively related to advancement. The general trend in prior research has been for extraversion to be positively related to leadership. However, the previous consideration of the Gough et al. (1978) and Blake et al. (1993) findings suggested that the relationship depended on the assertiveness elements of extraversion. Exhibitionist elements of extraversion were negatively related to leadership in the Gough et al. (1978) study, and it was suggested that sociability elements were unimportant given their absence as a correlate of leadership predictors identified in the Blake et al. (1993) study. The present evidence confirms that point.

The findings for neuroticism facets help extend the general picture that emotional stability is important for leadership. However, the specific FHIDs presumed to reflect emotional stability in this study do not appear to be close analogues of any specific attributes associated with leadership in the literature reviewed in the preceding sections of this paper. Thus, the results add to the evidence that emotional stability is important, but they do not help identify specific components of this domain as critical for leadership. In fact, the FHID labeled "Not Squeamish" concerns sensitivity to blood, insects, and other such stimuli. It may be important in the present instance because of the specific population studied (i.e., corpsmen). However, even this result adds to the evidence that emotional stability is important for leadership.

The size of the correlations in Table 5 might evoke concerns that this discussion is much ado about nothing. Superficially, the correlations were small and might be dismissed as practically

unimportant, despite being statistically significant. This appearance is partly a function of limited measurement precision of the FHIDs (median coefficient alpha = .61; range = .37 to .81). The adjusted correlations in Table 5 estimate what the observed correlations would be if FHID measurement precision were increased to .90. This figure is a reasonable target given that values between .85 and .95 are common in the literature on longer personality scales (e.g., Costa & McCrae, 1992; Schuerger, Zarrella, & Hotz, 1989). The adjusted FHID correlations were comparable in magnitude to the correlation between advancement and scores on the Armed Forces Qualifying Test (AFQT) in the same sample ( $r = .24$ ). Given that mental ability is the best available predictor of general job performance (Hunter & Hunter, 1984), the adjusted personality correlations compare favorably to this gold standard criterion.

The relationship between advancement and intelligence merits additional comment. This relationship underscores the previous observation that advancement is a complex criterion. The criterion almost certainly includes technical skill. Established relationships between technical proficiency and mental ability (e.g., Hunter & Hunter, 1984; McHenry et al., 1990) make it reasonable to infer a mental ability-technical proficiency-advancement sequence to account for the observed relationships. However, if technical proficiency were the sole determinant of advancement, there would be little reason to expect personality to be related to advancement. Personality is only weakly related to technical proficiency measures (Barrick & Mount, 1991; McHenry et al., 1990), so people selected for advancement solely on the basis of technical proficiency would not be expected to differ from the general population with respect to personality. Furthermore, if those selected for advancement did differ on some personality attributes by chance, there would be no reason to expect those chance differences to echo the themes noted when leadership criteria were examined. Thus, within the limits of the available evidence, these findings were consistent with the view that selected personality attributes are factors in leadership potential.

**Implications.** Three important implications can be derived from these Navy enlisted personnel findings. First, the pattern of personality correlates of advancement is consistent with major elements of research in other military populations. Second, the results strongly imply that personality must be analyzed at the level of specific personality facets, not general dimensions. Third, advancement may be affected by many attributes of the individual. Leadership-relevant behaviors may be only a minor element of the overall profile of attributes influencing advancement. Clear identification of the personality underpinnings of leadership, therefore, will require appropriate leadership criterion measures.

#### Outline of a Leadership Personality Profile

The evidence reviewed above provides a basis for a tentative personality profile for leadership. While dominance has been a mainstay of leadership research, this focus may have restricted attention unnecessarily. Many models of personality treat dominance as an element of extraversion. A more complete profile involves at least three other general domains of personality. The general pattern of relevant attributes within each domain is shown in Table 6.

Note that some components of neuroticism (e.g., anxiety, impulse control) and conscientiousness (e.g., orderly, deliberate, methodical) are not represented in the table. These omissions reflect the fact that these attributes appear to be irrelevant to leadership. With this point in mind, the differential relevance of specific facets within domains that is clearly evident for agreeableness and extraversion is a general rule that applies to all four domains. This rule also may apply to openness to experience, but there is too little evidence to make a meaningful decision on this topic at present.

**Table 6**  
**Personality and Leadership:**  
**Critical Elements in the Five-Factor Model Domains**

| <u>Domain</u>      | <u>Central Components for Leadership</u>                                    |
|--------------------|---|
| Neuroticism:       | Depression (-), Stress Vulnerability (-), Pessimism (-)                     |
| Conscientiousness: | Competence (+), Effort (+), Achievement, Striving (+), Self-Disciplined (+) |
| Agreeableness:     | Frank (+), Trusting (+), Kind (-), Generous (-)                             |
| Extraversion:      | Assertiveness (+), Aggressive (+), Sociable (-), Show-Off (-)               |

An interpretive thumbnail sketch of a leader drawn from the data underlying the preceding summary might be as follows. Leaders set high standards for themselves and routinely strive to meet those standards through disciplined effort. While they may be dutiful, orderly, and deliberate, these are not the key elements of conscientiousness. Leaders have a positive attitude, maintain a sense of optimism, and perceive themselves as continuing to perform well under stress. Leaders are assertive, self-confident in social interactions, and perceive themselves as able to influence others. Leaders even may be aggressive in interactions with other people. The purely social interaction components of extraversion do not appear relevant to leadership. Leaders are honest and candid with other people and unlikely to be swayed by the needs of particular subordinates (i.e., not kind-hearted) or to be especially punitive (i.e., not hard-hearted). Basic trust of human worth may be balanced by skepticism in some cases, but overall the individual should have a belief in the people he is to lead. The combination of honesty and basic trust with reasoned punishment and conditional support seems likely to foster a sense of equitable treatment in subordinates. Being assertive may be one expression of honesty and candor in leaders. The emphasis on honesty as an important component makes the profile less likely to be a form of Machiavellian striving for success at all costs, although this alternative cannot be completely ruled out.

This leadership personality profile may differ from everyday views of leadership. The typical view of a leader may be summarized by the idea of a "dominant" behavior pattern. The implication is that the leader is assertive and aggressive and, presumably, successful in influencing others. The current profile suggests that dominant behaviors may be only some of the most readily observable attributes of leaders. Focusing on just these attributes could be an oversimplification. Effective leadership appears to involve a much more complex pattern of behaviors, sometimes involving a careful balancing of attributes such as those related to kindness and hard-heartedness. Failure to appreciate this complexity may be one limiting factor in attempts to understand effective leaders.

#### Leadership Compared to General Job Performance

Trends in the military leadership-personality studies reviewed in previous sections of this paper suggest that a leadership selection profile could be established. The overall empirical base for such assertions is limited by the small number of available studies and by inconsistent coverage of the

personality domains. A summary of relevant trends in the job performance literature, therefore, is provided here to help establish some of the foregoing suggestions as specific instances of general principles.

The general picture of the relationships between personality and performance is provided in Table 7. This summary is based on the work of Kamp and Hough (1988), but other recent reviews present a similar picture (Barrick & Mount, 1991; Tett, Jackson, Rothstein, & Reddon, 1994). The cumulative evidence leaves little room for doubt that personality is related to job performance.

Table 7  
Summary of Personality-Performance Data  
(Adapted from Kamp & Hough, 1988)

| Predictor:         | Criterion: |               |                  |                  |                    |
|--------------------|------------|---------------|------------------|------------------|--------------------|
|                    | <u>Ed.</u> | <u>Train.</u> | <u>Job Prof.</u> | <u>Turn-over</u> | <u>Mal-adjust.</u> |
| Stability          | .14        | .19           | .11              | .17              | -.33               |
| Extraversion       | .06        | .13           | .07              | .04              | -.17               |
| Openness           | .17        | .19           | .01              | -.09             | .18                |
| Agreeable-<br>ness | .03        | .08           | .03              | -.02             | -.03               |
| Conscien-<br>tious | .13        | .12           | .11              | .14              | -.43               |

Note: Table entries are average correlations from the meta-analysis of personality and performance conducted by Kamp and Hough (1988). Ed. = Educational. Train. = Training. Job Prof. = Job Proficiency. Turnover = Job Turnover/Commitment. Maladjust. = Maladjustment.

One general principle underscored by Table 7 is that the predictive power of personality variables depends on the criterion. Personality is a weak predictor of job proficiency (i.e., technical elements of job performance) but a relatively strong predictor of job adjustment, a category that includes absenteeism and related behaviors.

One issue to be resolved in the personality-leadership area is how much, if at all, leadership depends on technical proficiency and how much it depends on other behaviors. The literature reviewed in this paper indicates that task or academic proficiency and more specific measures of leadership are only moderately correlated (Atwater, 1992; Blake et al., 1993; McHenry et al., 1990) and have distinct predictor profiles (Atwater, 1992; McHenry et al., 1990). For example, Atwater's (1992) findings indicated that mental ability predicted academic performance, but not leadership ratings. Personality measures showed the opposite pattern of relationships.

The logical application of this specificity of relationships would be to employ a multivariate

selection procedure. Mental ability measures would be the appropriate devices for screening for technical proficiency (Hunter & Hunter, 1984; Schmitt et al., 1984). Personality measures would provide a complementary basis for screening for other job-relevant behaviors.

The personality-performance literature also supports the position that specific facets of personality represent the appropriate level of analysis. Mershon and Gorsuch (1988) showed that adding specific facets to predictive equations that already included indicators of the major personality domains resulted in significant increments in predictive power across a wide range of jobs. Similarly, Kamp and Hough's (1988) review led them to identify achievement motivation as a particularly important facet of conscientiousness. This recommendation was incorporated into the Army's Project A personality profile (McHenry et al., 1990).

General personality-performance trends, therefore, make it possible to see two major aspects of personality-leadership relationships as specific instances of general principles. First, effective prediction of leadership will require isolation of specific facets of personality relevant to this behavioral domain. Second, leadership should be isolated as a specific behavioral element rather than inferred indirectly from measures such as advancement.

#### Job Assignments and Leadership Development

Determining that personality measures can predict leadership performance meets a minimum criterion for establishing personality profiles for leadership selection. The application of personality measures to screen for leadership positions involves consideration of issues other than the simple question of whether personality can predict leadership potential. The following sections of this paper briefly consider some of the more important of these issues. This consideration provides a broader context for assessing the potential utility of personality screening.

Personality Change. One limitation of the available evidence is that the studies typically measured personality, then predicted criteria assessed concurrently or at most 2 or 3 years later. How well will this information apply to the problem of predicting outcomes over longer periods of time? The answer to this question depends on whether or not personality changes with the passage of time. The possibility of personality change is a leadership selection problem if people must enter the pipeline for leadership billets well in advance of the time they actually take on jobs involving leadership as a primary responsibility. Jobs that involve leadership as one of the primary requirements may not occur until the middle or end of a person's Navy career. If leadership potential is to be a selection criterion for these later jobs, it is important to answer the following question: Can personality measurements taken at the time of entry into the career pipeline predict leadership potential much later in the person's career?

Answers to these questions are provided by research on the stability of personality. Stability is quantified as a stability coefficient, the correlation between scores on a personality scale administered to the same sample of people at two different times. Reviews of the relevant research (Schuerger et al., 1989) indicate that stability is higher when:

- a. Normal populations are studied rather than prisoner or patient populations.
- b. Scales with high measurement precision are used.

- c. The interval between measurements is short.
- d. The population studied is older.

With these factors taken into account, gender and the specific personality construct measured have little effect on long-term stability.

The findings relating stability of personality characteristics to the interval between measurements are most germane to the questions raised above. How well can measures of personality taken at the beginning of a Navy career be expected to predict the personality at the middle of the career or later? Schuerger et al. (1989) estimate the rate of change in stability correlations to be  $-.158$  when the unit of measurement is the logarithm (base 10) of the interval (in months) between measurements and analyses are restricted to studies with at least 12 months between personality measurements. Applying this formula, a reasonable upper boundary for the stability coefficients of personality tests can be estimated by assuming an initial measurement precision (i.e., reliability) of  $.90$  (where  $1.00$  would be error-free measurement). In this case, predicted stability coefficients would be  $r = .63$  over 10 years,  $r = .51$  over 15 years, and  $r = .49$  over 20 years. A lower bound can be estimated by assuming an initial reliability of  $.80$ . In this case, the corresponding predictions would be  $r = .43$  at 10 years,  $r = .41$  at 15 years, and  $r = .39$  at 20 years. Evidence presented by Schuerger et al. (1989) places the typical reliability of personality tests at  $.85$ , so typical stability coefficients would be about halfway between these best and worst cases if standard personality inventories were used. Thus, 15-year stabilities, for example, would be approximately  $r = .46$ . Smith (1992) used different methods to develop an equation for predicting stability coefficients, but it, too, yields an estimate of  $r = .46$  for a 15-year interval.

What are the implications of these findings for predicting leadership potential? First, suppose an above-average score on a personality test were to be used as a selection criterion. Fifteen years later, changes in personality will have occurred, but the 15-year stability of  $r = .46$  implies that 73% of the people selected would meet the criterion 15 years later (Rosenthal & Rubin, 1979). Thus, personality-based selection procedures would increase the pool of above average candidates 23% relative to what would be expected with random assignment.

Determinants of Personality Development. The stability coefficients mentioned in the preceding section really present two opportunities for enhancing leadership selection programs. Moderate stability makes personality screening useful even over moderately long periods of time. At the same time, the fact that these coefficients are less than  $1.00$  implies that change is taking place. If the determinants of change could be identified, that information could be applied to promote leadership development. Such efforts would complement the more passive approach of relying solely on leadership selection. In particular, if the causal factors underlying personality changes include exposure to specific experiences in the Navy, initial leadership potential could be enhanced by structuring Navy experiences to provide optimal growth opportunities for promising young men and women.

One way to make a case for experience as the determinant of personality change in young adults is to rule out other plausible explanations. One plausible alternative arises from the fact that personality variables are influenced by genetic factors (Plomin, Chipuer, & Loehlin, 1990). While genetic influences sometimes are mistakenly equated with stability, genes influence patterns of growth. For this reason, changes in young adults might represent genetically based development. If so, opportunities for modifying

growth curves would be constrained and might be so limited that such efforts would not be cost effective.

Available evidence uniformly contradicts a genetic basis for personality change in late adolescence and early adulthood. Changes in personality during this period are not consistent with what would be expected if genetics were a major determinant of these changes (Carmichael & McGue, 1994; Loehlin, Horn, & Willerman, 1990; McGue, Bacon, & Lykken, 1993; Plomin & Nesselroade, 1990). These negative findings are not likely to be the result of low reliability of change scores. Given the evidence that personality is moderately stable over periods of even a few years (Schuerger et al., 1989), changes can be assessed with acceptable precision (Rogosa, 1988). Thus, the best summary of the evidence appears to be that ". . . the stable core of personality is strongly associated with genetic factors but that personality change largely reflects environmental factors" (McGue et al., 1993, p. 96).

Job experiences may be one environmental factor that contributes to personality change. Data on this point are even scantier than those pertaining to genetic influences, but at least one study has shown that job attributes can influence personality development (Kohn & Schooler, 1973).

Navy experiences can influence personality. Some military experiences appear to increase scores on the personality attributes characteristic of individuals with leadership potential. For example, undergoing basic training is associated with increased emotional stability (Ekman, Friesen, & Lutzker, 1962; Vickers et al., 1991) and conscientiousness (Vickers et al., 1991). These changes would increase leadership potential.

Other Navy experiences may have less salutary effects. Studies of trainees entering Corpsman School (Norton & Booth, 1976) and Basic Underwater Demolition/SEAL (BUD/S) training (McDonald, Norton, & Hodgdon, 1990) have shown shifts in score distributions which would reduce the leadership potential. For example, when personality was measured with the CPS at entry into Corpsman School and after graduation, entry scores were higher on nearly all scales. The lower post training scores on Trust, Emotional Stability, and Extraversion all are suggestive of movement away from the desired leadership profile. The analyses did not include FHID scores, so it is impossible to say how much the observed effects actually involved the critical FHIDs for leadership.

Both the positive and negative findings just cited must be interpreted cautiously. The studies were not designed to identify specific experiences affecting personality. Thus, it is not possible to say what elements of the programs produced the apparent changes. Indeed, the apparent changes may be no more than reactions to specific situations. The stresses experienced early in basic training may elevate recruits' reporting of neurotic tendencies, for example. The diminution of stress over the course of training then may produce the appearance of personality trait improvements that are nothing more than recovery from a transient situational reaction. The BUD/S and Corpsman School samples may have biased their initial personality descriptions in a positive direction to promote a positive image with the organization. After surviving the selection processes, this self-promotion no longer is required and a more accurate, less flattering profile is reported. Thus, the findings at best indicate the potential for Navy experiences to modify personality.

Although little is known about job influences on personality development, substantial personality growth is known to occur between high school and the early thirties (e.g., compare Costa & McCrae's college age norms to their adult norms; Costa & McCrae, 1992). Normative trends indicate change in the

direction that would improve leadership abilities. The average size of the changes is nontrivial and presumably depends on commonplace experiences given that genetic bases are ruled out. These commonplace experiences logically include work experiences. Until specific causal factors can be identified, there is no way to make use of this naturally occurring change as an opportunity for leadership development.

Personality and Mental Ability. General mental ability is the best single predictor of job performance across a wide range of jobs (Hunter & Hunter, 1984). Mental ability therefore is likely to be included in any reasonable selection protocol. This raises the question of how personality-based selection would operate in combination with selection based on mental ability.

If mental ability were highly correlated with personality, selection based on mental ability would select people with particular personality traits. Personality-based selection then would be redundant given prior or concurrent screening for mental ability.

Personality and mental ability are not redundant. Among Navy recruits, the four major dimensions of personality relevant to leadership correlate less than  $r = .20$  with Armed Services Vocational Aptitude Battery (ASVAB) scales (Vickers, 1992) in a large sample of U.S. Navy recruits. Similar low correlations were obtained in the Army's Project A study (McHenry et al., 1990). In the Corpsman School sample described above (cf., pp. 17-22), AFQT score produced correlations less than  $r = .18$  for the leadership-relevant scales (Vickers et al., 1995). Thus, selection based on mental ability may ensure better technical performance, but it does not guarantee better leadership. As noted previously in the discussion of the Corpsman School study findings, these results were consistent with observations in other studies (e.g., McHenry et al., 1990).

An example can illustrate the implications of the independence of personality and mental ability for selection programs. Consider two candidates for a training position. One has a slightly higher mental ability than the other. Based on this information, the first candidate would be expected to have a slightly higher probability of success than would the second candidate. However, suppose additional information were available about the personality profiles of the two candidates. This information indicates that the first candidate lacks motivation and stress resistance, while the second candidate possesses these attributes in abundance. The personality differences could be enough to offset the small differences in ability in which case the second candidate would have a higher probability of training success despite his or her lower mental ability. Even if this were not the case, the second candidate might have better long-term career potential because he or she possessed leadership attributes that would become increasingly important over the course of his or her career.

This hypothetical example illustrates that the rank ordering of candidates for a training program could be modified if personality variables were considered in addition to mental ability. The stipulation that the two individuals are close with respect to mental ability is an important element of the example, because mental ability is a stronger predictor of training success and technical proficiency than is personality. As a result, large personality differences between candidates are needed to offset minor differences in mental ability. Personality differences probably cannot produce reversals in probability of success when mental ability differences are large. However, the key to reducing attrition from training programs may be making the correct call in marginal cases (i.e., those individuals who are near the cutoff for program admission). Because more people are near the middle of the overall ability distribution than

are at the high end of the distribution, the number of candidates near the cutoff point for admission can be a substantial minority of the total candidate pool. It is precisely in this critical region for selection that personality can play a useful role.

Possible Adverse Effect. Screening devices have adverse impact if they selectively exclude people from specific demographic groups. Minority group membership is a common concern when discussing adverse effects, but personality criteria actually may favor the minority groups who might be adversely affected by other selection criteria.

As an example, consider data on FFM measures from the NEO Five-Factor Inventory (Costa & McCrae, 1992). This inventory was completed by 4,066 incoming male U.S. Navy recruits (Vickers, 1986) between 1986 and 1990. When recruits were classified into groups based on their reported race/ethnicity, significant group differences were observed for the dimensions of Neuroticism ( $F = 19.99$ ,  $p < .001$ ), Openness ( $F = 12.76$ ,  $p < .001$ ), Conscientiousness ( $F = 24.29$ ,  $p < .001$ ), and Agreeableness ( $F = 2.54$ ,  $p < .027$ ). Effect size (ES) for group differences was computed as

$$ES = \frac{\text{Minority average} - \text{White average}}{\text{White standard deviation}}$$

ESs for the primary minority groups, blacks and Hispanics, were:

|               | Blacks | Hispanics |
|---------------|--------|-----------|
| Neurotic      | -.40   | -.20      |
| Openness      | -.33   | -.12      |
| Conscientious | .37    | .26       |
| Agreeable     | .04    | .06       |

Thus, blacks and Hispanics scored lower than did whites on neuroticism and higher than did whites on conscientiousness. The significance of these trends can be seen when evidence reviewed in prior sections of this paper is combined with meta-analyses of the general personality-performance literature (Barrick & Mount, 1991; Kamp & Hough, 1988). This combination suggests that personality-based selection would tend to favor these minority groups whether the selection objective was to maximize leadership potential or general job performance. It should be noted, however, that the group differences need to be confirmed with additional data. Evidence from other sources such as studies of the MMPI (Timbrook & Graham, 1994) suggest that the results might not replicate. However, a meaningful conclusion may require that specific personality attributes be identified as potential candidates for a screening program, then compared. The leadership literature reviewed in prior sections of this paper gives ample reason to be skeptical about sweeping generalizations based on general FFM domains as the level of analysis.

The possibility of adverse effects of selection on women is another important problem. Men and women differ in a number of personality attributes (Feingold, 1994), several of which are related to leadership potential in the present analysis. For example, women are, on the average, more nurturing. When taken to extremes, this tendency might impair the agreeableness balance necessary for leaders. It

would be necessary to confirm that this difference was present and related to performance in Navy personnel before regarding this possibility as a reason to abandon personality-based leadership selection. One possibility is that important behaviors such as nurturance are under discriminative control by the individual so that the person who is an extremely nurturing individual in his or her personal life is less so on the job.

**Response Bias.** Response bias occurs when people selectively distort their self-descriptions when completing personality inventories. Distortion may be especially likely when personnel selection is the reason for completing the questionnaire. In this situation, people may try to present themselves in a positive light because the potential benefits of getting a "good" score are highly attractive.

The potential for bias is a concern because it is a commonplace finding that people can fake personality inventories when instructed to put forth the best possible image. However, the fact that personality inventories can be faked is not the same as evidence that they are faked in actual situations. Many personality inventories have been constructed with scales to detect various strategies for faking. These scales then are used to adjust scores on other personality measures or to simply delete people whose response pattern makes it likely that they faked the test. The application of these strategies to correct for faking typically has little effect on the usefulness of the personality scores as predictors of criteria, including job performance (e.g., Hough, Eaton, Dunnette, Kamp, & McCloy, 1990).

The personality profile for leadership offers some protection against response bias effects. A simple strategy of describing one's self in positive terms will not ensure a high leadership potential score. For example, if responses to all the items pertaining to agreeableness were biased in a positive direction, this bias would increase scores on some leadership potential predictors at the same time that it decreased scores on others.

**Biodata and Leadership Personality.** Biodata is an alternative to personality measurement for leadership screening. Typically biodata items ask about specific aspects of past experience that might be relevant to a particular criterion. For example, biodata questions pertaining to leadership potential might deal with whether the person has held leadership positions in school or community activities in the past.

The biodata approach to assessing leadership potential could be defended in two ways. First, it could be argued that people in the past have had adequate opportunities to make subjective judgments of a person's abilities and select those with high leadership potential. Note, however, that the opportunity to lead may vary for people from different backgrounds because of differences in the number of leadership positions and the number of people competing for those positions (e.g., in a large school versus a small school). The second justification would be the general dictum that "Past behavior is the best predictor of future behavior."

Both of these justifications assume that past opportunities have been equally distributed and that peers and supervisors are good at identifying true leadership potential. These assumptions may not be valid. It is conceivable that many potential leaders are not given opportunities to do so because of errors in these informal assessment processes. If so, additional methods of identifying potential are needed.

Biodata may be complementary to personality measurement. Biodata can indicate past opportunities to develop potential. The intelligent person will not be well-informed without schooling.

The potential leader will not develop the ability to make constructive use of his or her potential without the opportunity to practice leadership. Thus, biodata may indicate who will be the more developed among the leaders, while personality predicts the potential for further development.

#### Evaluation of Personality Measurement Inventories

The last question posed in the introduction to this report was "What available personality measures are most suitable for assessing leadership potential?" All of the foregoing discussion is essentially background for answering that question.

None of the standardized personality inventories used in prior research is entirely satisfactory. The ACL (Gough & Heilbrun, 1965) lacks indicators of openness to experience. The CPI (Gough, 1987) lacks coverage of agreeableness. The 16-PF (Cattell et al., 1970) provides only limited coverage of the conscientiousness domain. The CPS (Comrey, 1970) also appears to be limited in the conscientiousness domain and provides scales with limited measurement precision.

The limitations of instruments that have been used in research to date make it clear that no study has paired a good leadership criterion with a personality inventory covering all of the critical personality facets. Fortunately, a number of standardized instruments exist that could be used to correct deficiencies on the personality measurement side of the equation.

Two major themes define important criteria for selecting or developing a questionnaire for leadership selection. First, at least four of the five general FFM domains must be covered. The fifth, openness, may be important as well, but too little evidence relating to this dimension is available to determine confidently that this domain must be covered. Second, leadership is related to specific facets within domains. The criteria derived from these themes are:

- a. All five FFM domains should be covered.
- b. The specific personality facets believed to be relevant within each domain should be assessed.

The criterion rules out a few commonly used questionnaires. The Eysenck Personality Questionnaire (Eysenck & Eysenck, 1983) does not separate the agreeableness and conscientiousness domains. The Minnesota Multiphasic Personality Inventory (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) emphasizes constructs that would be assigned to the FFM neuroticism domain.

The second criterion could be applied to choose between other standardized questionnaires that meet the initial criterion. However, only an incredible stroke of luck would produce a questionnaire with exactly the set of facets required for the present purposes. However, the NEO PI-R (Costa & McCrae, 1992) comes reasonably close to the objective. Based on the leadership profile presented on pp. 20-21 above, the NEO-PIR has a number of positive characteristics for the present purposes. These characteristics include:

- a. The instrument includes scales suitable for making necessary distinctions within FFM domains. These distinctions include the difference between assertiveness and sociability in the extraversion domain, between achievement motivation and orderliness in the conscientiousness

domain, and between trust and kindness (tendermindedness) in the agreeableness domain. The only notable attribute missing from the list of facets is optimism, but an approximation to optimism is provided by combining neuroticism and extraversion facets (Marshall, Wortman, Kusula, Hervig, & Vickers, 1992).

b. The inventory has been the object of extensive validation studies (cf., Costa & McCrae, 1992). The validation studies include examination of associations to several competing inventories for leadership selection. The validity information could be useful in deciding whether other instruments have the potential to augment an initial profile.

c. The NEO PI-R scales can be linked empirically to the scales used in available studies of personality and military leadership. The relationships between the NEO-PIR and the scales used in prior leadership work have been investigated as part of the validation studies referred to in (b).

d. The NEO PI-R has growing professional acceptance as a standardized measure of the FFM (Ozer & Reise, 1994). Indeed, the NEO-PIR may be regarded by many as "the" standardized inventory relative to this personality assessment model.

e. The NEO PI-R provides coverage of the neglected openness domain. Weak evidence noted above suggests that the tolerance components of openness might be part of the overall leadership picture. However, the general lack of openness measures in prior research makes this possibility difficult to evaluate. Given increasing pressures to diversify the sociodemographic makeup of military workplaces, such tolerance may be even more important in the future than it is today. If any research is conducted in conjunction with leadership selection, it will be highly desirable that openness be measured with some precision.

f. The NEO PI-R has a history of acceptability and utility in the military. Acceptability to individuals has been inferred from the types of questions asked of the author and his colleagues in administering earlier versions of this questionnaire to more than 5,000 Navy recruits. Utility has been established by the application of NEO measures in screening programs (e.g., current Navy recruit screening).

g. Data bases are available to study NEO variables as predictors of midcareer Navy success. Prior research provides profiles for the original version of the NEO Personality Inventory (Costa & McCrae, 1985) for large samples of recruits who entered the Navy 6 to 8 years ago. These data could be useful in establishing baseline career trends for different personality types as a reference point for evaluating the effects of selection programs. These data also would be useful for directly establishing the predictive value of personality for midcareer leadership ratings given a suitable leadership criterion.

When compared to this list of NEO PI-R attributes, other competitive questionnaires have specific limitations. The Multidimensional Personality Questionnaire (MPQ; Tellegen & Waller, in press) does not have an obvious measure of trust. Also, some MPQ facet scales have as few as two items. Short scales generally are less reliable than are longer scales (Lord & Novick, 1968). Thus, incomplete coverage of some important aspects of personality and low measurement precision would be expected if the MPQ

were applied to the present purposes.

The CPS (Comrey, 1970) assesses most of the critical components of the leadership profile and has produced valuable findings in military populations. The major limitation of that questionnaire for the present purposes appears to be the limited coverage or lack of the achievement motivation component of conscientiousness. Also, the typical reliability of the CPS facets observed in our studies (median = .61) is even lower than that given for the NEO PI-R facets (median = .73).

Other competing inventories may avoid some of the domain coverage and reliability problems. However, none appear to possess all of the attributes previously listed for the NEO PI-R.

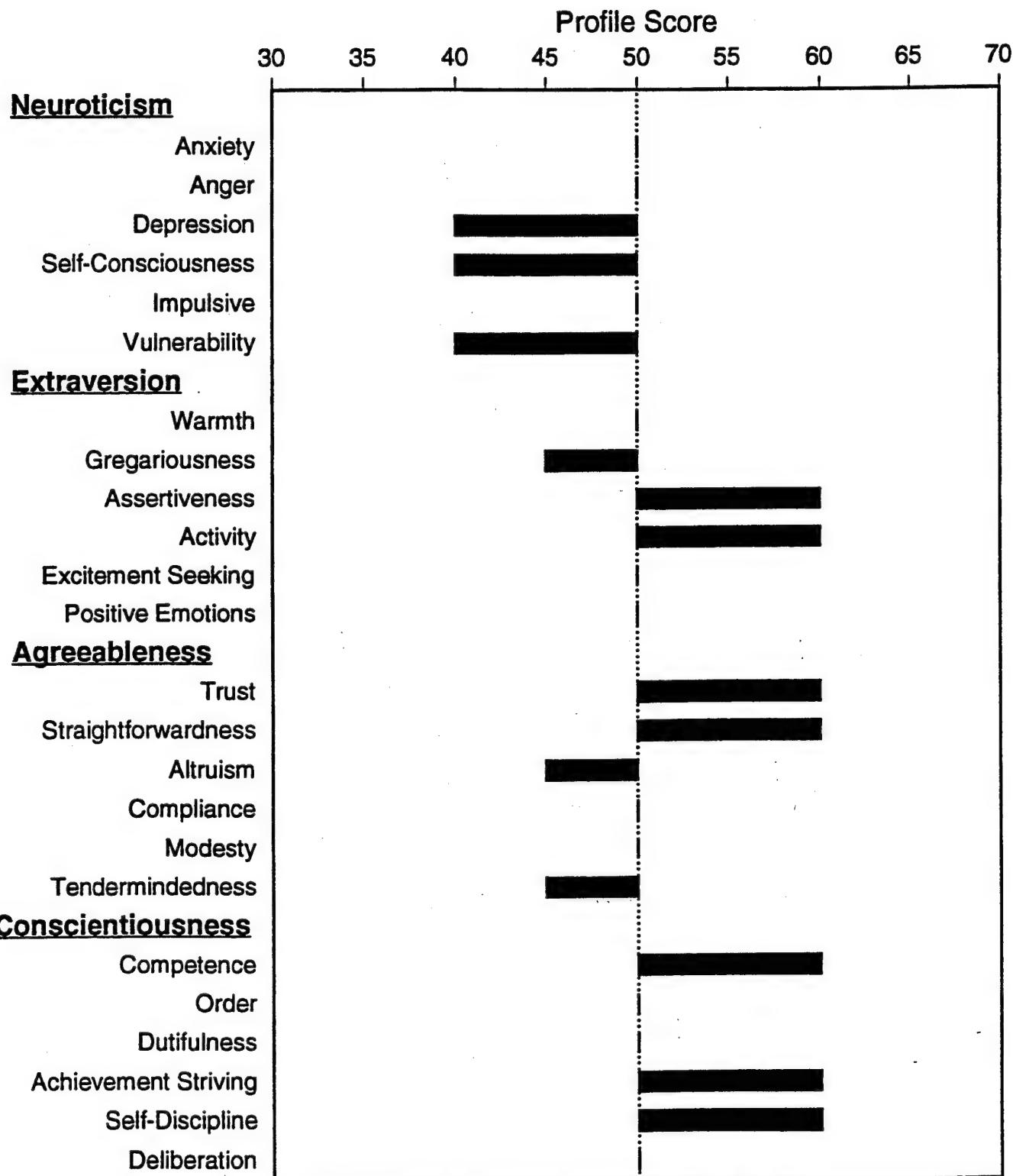
Based on these considerations, the NEO PI-R is a suitable instrument for leadership selection. A prototype selection profile for this instrument is shown in Figure 1. In this profile, a score of 50 represents an average individual. This score is represented by the line of dots running from top to bottom down the middle of the profile box. If a good leader should be below average on a particular facet, the bar for that facet extends to the left of the midline (i.e., indicates a score less than 50). If a good leader should be above average on a facet, the bar extends to the right of the midline (i.e., indicates a score greater than 50). Facets believed to be irrelevant to leadership were assigned a value of 50 and appear as solid segments on the midline.

The prototype leadership selection profile does not show positive and negative attributes as extreme deviations from the score of the average sailor. For example, the profile might have shown a score of 70 or greater on assertiveness, competence, achievement striving, or other positive attributes.

The decision to describe the prototype leadership potential profile as involving only moderate deviations from average was based on two considerations. First, it is hard to find individuals who simultaneously have truly extreme scores on several independent dimensions of personality. Some personality attributes are important for leadership and should be elevated in good leadership candidates. These attributes have been fixed at values one standard deviation above the population mean (i.e., 10 points different than the mean of 50) in the figure. The mean score could be higher, but only about 1 in 6 sailors will pass the current criterion. If several statistically independent criteria are applied, the 1 in 6 rate of viable candidates drops rapidly. The leadership profile includes indicators from four general domains. Scores on indicators from these different domains tend to be largely independent. If the facets from different domains were completely independent statistically, the probability of satisfying the 1 in 6 criterion for four domains simultaneously would be 1 in 1,296. Thus, only 1 sailor in every 1,296 would satisfy all four criteria. A higher hurdle for individual criteria would mean even fewer candidates.

The second consideration is that attributes within a given domain generally are positively correlated. This statement is true even though attributes are largely uncorrelated across domains. The presence of correlations within domains implies that a person selected on the basis of a high score on one facet within a domain will tend to have above-average scores on other facets within that domain. Thus, there is little chance that a person with a moderately high score on one facet in a domain also will have extremely low scores on other facets in the same domain. More individuals will be found who have high scores on one facet and moderately low scores on other facets. The profile in Figure 1 reflects a decision to accentuate the positive by setting the deviation from average higher for positive indicators than for negative indicators. For this reason, negative indicators have been shown as only one-half standard

**Figure 1** Personality Assessment for Leadership  
**Prototype Leader Personality Profile**



deviation below the mean (i.e., a value of 45) if the domain also includes one or more positive indicators. Facets judged irrelevant to predicting leadership potential based on the evidence in hand are shown as average scores (i.e., values of 50).

The openness domain has been omitted from Figure 1. This omission was made because too little evidence is available to have any confidence about statements regarding the importance of this domain for leadership. Speculations about the relevance of tolerance have been offered in earlier sections of this paper, but these speculations have less hard evidence behind them than some of the other judgment calls. It would be highly desirable to have these gaps filled in to complete the profile.

The Figure 1 prototype profile is a summary of the available evidence regarding military leadership and personality translated into NEO PI-R scores. This summary clearly involves judgment calls about how certain findings in the literature should be interpreted in NEO PI-R terminology and how much weight to give to specific findings. Other judges might make different judgment calls. However, the summary provides a viable starting point for conducting selection research given what is known presently in the judgment of at least one informed observer.

Two critical points should be noted regarding the prototype selection profile. First, this profile is an approximation based on the evidence reviewed above. The specific values of facet scores defining the profile should not be interpreted too rigorously at this time. Indeed, this specific profile has not yet been validated as a predictor of Navy leadership or any other kind of leadership in any single study. **Validation of the profile must be a high priority for any application.** Second, the NEO PI-R facets comprising the profile have only moderate measurement precision. More precise assessments might be made by adding items or adopting sets of scales from other sources that have satisfactory precision. The author is unaware of any personality inventory that provides better measurement of the critical constructs. **Construction of an improved measurement inventory should be considered.**

Although evidence shows that a profile such as that in Figure 1 could be useful in selecting leadership candidates, that profile should not be treated as a closed book. To reiterate points made previously, no study has combined the investigation of personality at the facet level of assessment with a well-developed leadership criterion. The profile is regarded as a prototype for exactly this reason. The prototype profile no doubt can be refined by studies designed to eliminate these limitations.

### Summary and Recommendations

The evidence relating personality to military leadership is limited in quantity but consistent in content. Personality variables have predicted leadership in prior studies and, therefore, may be useful for leadership selection. A selection profile must focus on specific aspects of personality that are widely spread across the personality spectrum. The NEO PI-R (Costa & McCrae, 1992) is a suitable instrument for this purpose. A prototype selection profile expressing recurrent themes in the available literature in terms of NEO PI-R measures provides a starting place for further study of personality and leadership.

The empirical basis for the foregoing conclusion and recommendation is imperfect. No single study combined a sound leadership criterion with complete coverage of relevant personality attributes. The leadership criterion problem with past research might be solved by integrating and adapting available leadership rating or ranking procedures. The Military Aptitude Rating Scale used by Gough et al. (1978)

is a logical starting point for this undertaking. That measure stands out in the context of prior research as the sole leadership indicator for which construct validity evidence was cited (i.e., correlations between the scale ratings and other measures, including standard officer ratings, combat performance, and promotions).

The coverage problem with past research was most clearly evident in the fact that no study provided completely satisfactory coverage of specific attributes within the domains. However, the consistency of themes across studies made a strong case for the position that personality measures can contribute effectively to the prediction of leadership ability. Perhaps the key observation at this time is that no study has combined a leadership personality profile that assesses all the critical personality facets with a well-defined leadership criterion. Ideally, research designed to validate the prototype profile would be undertaken prior to implementing selection programs based on this information.

#### References

Atwater, L. E. (1992). Beyond cognitive ability: Improving the prediction of performance. Journal of Business and Psychology, 7, 27-44.

Barrick, M. R., & Mount, M. R. (1991). The Big Five personality dimensions and job performance: A meta-analysis. Personnel Psychology, 44, 1-26.

Blake, R. J., Potter, E. H., III, & Slimak, R. E. (1993). Validation of the structural scales of the CPI for predicting the performance of junior officers in the U.S. Coast Guard. Journal of Business and Psychology, 7, 431-448.

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). Manual for the restandardized Minnesota Multiphasic Personality Inventory: MMPI-2. An interpretive and administrative guide. Minneapolis: University of Minnesota Press.

Carmichael, C. M., & McGue, M. (1994). A longitudinal study of personality change and stability. Journal of Personality, 62, 1-20.

Cattell, R., Eber, H., & Tatsuoka, M. (1970). Handbook for the 16PF. Champaign, IL: Institute for Personality and Ability Testing.

Comrey, A. L. (1970). Manual for the Comrey Personality Scales. San Diego: Educational and Industrial Testing Service.

Costa, P. T., Jr., & McCrae, R. R. (1985). The NEO Personality Inventory Manual. Odessa, FL: Psychological Assessment Resources.

Costa, P. T., Jr., & McCrae, R. R. (1992). NEO PI-R Professional Manual. Odessa, FL: Psychological Assessment Resources.

Ekman, P., Friesen, W. V., & Lutzker, D. R. (1962). Psychological reactions to infantry basic training. Journal of Consulting Psychology, 26, 103-104.

Eysenck, H. J., & Eysenck, S. B. G. (1983). Manual for the Eysenck Personality Questionnaire. San Diego, CA: Educational and Industrial Testing Service.

Feingold, A. (1994). Gender differences in personality: A meta-analysis. Psychological Bulletin, 116, 429-456.

Gerbing, D. W., & Tuley, M. R. (1991). The 16PF related to the five-factor model of personality: Multiple-indicator measurement versus the a priori scales. Multivariate Behavioral Research, 26, 271-279.

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. Psychological Assessment, 4, 26-42.

Gough, H. G. (1984). A managerial potential scale for the California Psychological Inventory. Journal of Applied Psychology, 69, 233-240.

Gough, H. G. (1987). Manual for the California Psychological Inventory. Palo Alto, CA: Consulting Psychologists Press.

Gough, H. G., & Heilbrun, A. B. (1965). The Adjective Check List Manual. Palo Alto, CA: Consulting Psychologists Press.

Gough, H. G., Lazzari, R., Fioravanti, M., & Stracca, M. (1978). An adjective checklist scale to predict military leadership. Journal of Cross-Cultural Psychology, 9, 381-399.

Hough, L. M., Eaton, N. K., Dunnette, M. D., Kamp, J. D., & McCloy, R. A. (1990). Criterion-related validities of personality constructs and the effect of response distortion on those validities. Journal of Applied Psychology, 75, 581-595.

Hunter, J., & Hunter, R. (1984). Validity and utility of alternative predictors of job performance. Psychological Bulletin, 96, 72-98.

John, O. P. (1990). The "Big Five" factor taxonomy: Dimensions of personality in the natural language and in questionnaires. In L. Pervin (ed.), Handbook of Personality: Theory and Research (pp. 66-100). NY: Guilford.

Kamp, J. D., & Hough, L. M. (1988). Utility of temperament for predicting job performance. In L. M. Hough (Ed.), Literature Review: Utility of temperament, biodata, and interest assessment for predicting job performance (pp. 1-90). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Kohn, M. L., & Schooler, C. (1973). Occupational experience and psychological functioning: An assessment of reciprocal effects. American Sociological Review, 38, 97-118.

Loehlin, J. C., Horn, J. M., & Willerman, L. (1990). Heredity, environment, and personality change: Evidence from the Texas Adoption Project. Journal of Personality, 58, 221-243.

Lord, F. M., & Novick, M. R. (1968). Statistical Theories of Mental Test Scores. Reading, MA: Addison-Wesley.

Marshall, G. N., Wortman, C. B., Kusulas, J. W., Hervig, L. K., & Vickers, R. R., Jr. (1992). Distinguishing optimism from pessimism: Relations to fundamental dimensions of mood and personality. Journal of Personality and Social Psychology, 62, 1067-1074.

McCrae, R. R., & Costa, P. T., Jr. (1992). Discriminant validity of NEO-PIR facet scales. Educational and Psychological Measurement, 52, 229-237.

McCrae, R. R., Costa, P. T., Jr., & Piedmont, R. L. (1993). Folk concepts, natural language, and psychological constructs: The California Psychological Inventory and the five-factor model. Journal of Personality, 61, 1-26.

McDonald, D. G., Norton, J. P., & Hodgdon, J. A. (1990). Training success in U.S. Navy special forces. Aviation, Space, and Environmental Medicine, 61, 548-554.

McGue, M., Bacon, S., & Lykken, D. T. (1993). Personality stability and change in early adulthood: A behavioral genetic analysis. Developmental Psychology, 29, 96-109.

McHenry, J. J., Hough, L. M., Toquam, J. L., Hanson, M. A., & Ashworth, S. (1990). Project A validity results: The relationship between predictor and criterion domains. Personnel Psychology, 43, 335-354.

Megargee, E. I. (1972). The California Psychological Inventory Handbook. San Francisco: Jossey-Bass.

Mershon, B., & Gorsuch, R. L. (1988). Number of factors in the personality sphere: Does increase in number of factors increase predictability of real-life criteria? Journal of Personality and Social Psychology, 55, 675-680.

Noller, P., Law, H., & Comrey, A. L. (1987). Cattell, Comrey, and Eysenck personality factors compared: More evidence for the five robust factors? Journal of Personality and Social Psychology, 53, 775-782.

Norton, R. S., & Booth, R. F. (1976). Reliability and stability of the Comrey Personality Scales. Psychological Reports, 38, 767-770.

Ozer, D. J., & Reise, S. P. (1994). Personality assessment. Annual Review of Psychology, 45, 389-419.

Piedmont, R. L., McCrae, R. R., & Costa, P. T., Jr. (1991). Adjective Check List scales and the five-factor model. Journal of Personality and Social Psychology, 60, 630-637.

Plomin, R., Chipuer, H. M., & Loehlin, J. C. (1990). Behavioral genetics and personality. In L. Pervin (ed.), Handbook of Personality: Theory and Research (pp. 225-243). NY: Guilford.

Plomin, R., & Nesselroade, J. R. (1990). Behavioral genetics and personality change. Journal of

Personality, 58, 191-220.

Rogosa, D. (1988). Myths about longitudinal research. In K. W. Schaie, R. T. Campbell, W. Meredith, & S. C. Rawlings (Eds.), Methodological Issues in Aging Research (pp. 171-209). NY: Springer-Verlag.

Rosenthal, R. & Rubin, D. B. (1979). A note on variance explained as a measure of the importance of effects. Journal of Applied Social Psychology, 9, 395-396.

Santens, J. S., & Walker, J. D. (1983). Behavioral study of Air Force officers selected for early promotion (Report ACSC-83-2225). Maxwell Air Force Base, AL: Air Command and Staff College.

Schmitt, N., Gooding, R. S., Noe, R. A., & Kirsch, M. (1984). Metaanalyses of validity studies published between 1964 and 1982 and the investigation of study characteristics. Personnel Psychology, 37, 407-422.

Schuerger, J. M., Zarrella, K. L., & Hotz, A. S. (1989). Factors that influence the temporal stability of personality by questionnaire. Journal of Personality and Social Psychology, 56, 777-783.

Smith, D. D. (1992). Longitudinal stability of personality. Psychological Reports, 70, 483-498.

Tellegen, A. (1991). Personality traits: Issues of definition, evidence, and assessment. In W. Grove & D. Cicchetti (Eds.), Thinking clearly about Psychology: Essays in honor of Paul E. Meehl: Vol. 2. Personality and psychopathology (pp. 10-35). Minneapolis: University of Minnesota Press.

Tellegen, A., & Waller, N. G. (in press) Exploring personality through test construction: Development of the Multidimensional Personality Questionnaire. In S. R. Briggs & J. M. Cheek (Eds.), Personality measures: Development and evaluation (Vol. 1). Greenwich, CT: JAI Press.

Tett, R. P., Jackson, D. N., Rothstein, M., & Reddon, J. R. (1994). Meta-analysis of personality-job performance relations: A reply to Ones, Mount, Barrick, and Hunter (1994). Personnel Psychology, 47, 157-172.

Timbrook, R. E., & Graham, J. R. (1994). Ethnic differences on the MMPI-2? Psychological Assessment, 6, 212-217.

Vickers, R. R., Jr., (1986). [Evaluation of risk factors for infectious disease]. Unpublished raw data.

Vickers, R. R., Jr. (1992). Personality, Mental Ability, and Performance in Navy Basic Training. Presentation at University of Minnesota, October.

Vickers, R. R., Jr., Hervig, L. K., & Booth, R. (1995). Personality and success among military enlisted personnel: An historical prospective study of U.S. Navy corpsmen. Manuscript in preparation.

Vickers, R. R., Jr., Hervig, L. K., Walton, E., Ackerman, P., Kanfer, R., & Squire, L. (1991). [Stress reactivity: A performance-relevant psychobiological typology]. Unpublished raw data.

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| <p>13. ABSTRACT (Maximum 200 words)</p> <p>The early identification of people with leadership potential would help ensure the development of that potential in Navy personnel. A review of the empirical literature relating personality to military leadership indicated: (a) Leadership was related to at least four general domains of personality (neuroticism, extraversion, agreeableness, conscientiousness); (b) only specific elements within each domain were relevant to leadership; and (c) in some instances, one element of a general domain could be a positive indicator, while another would be a negative indicator. Examples of the last finding include assertiveness and sociability in the extraversion domain. Trust and kindness provide an example in the agreeableness domain. Additional evidence indicated that personality is sufficiently stable across time to permit its use in selection. Adverse effects from using personality in leadership selection do not appear to be present for minority groups. Adverse effects may be present for women when compared to men, but the magnitude of any such effects remains to be determined. A prototype leadership selection profile is provided based on the evidence. This profile can be assessed with the NEO Personality Inventory-Revised. However, no available study combined measures of all the key personality elements with a well-validated measure of leadership. This profile should be treated as hypothetical until directly confirmed with a sound leadership criterion and appropriate personality measures in a representative sample of Navy enlisted personnel.</p> |  |  |   |
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